Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Equating coefficients,

$$a_1 = \tfrac{1}{2}, \qquad 2a_2 = \tfrac{1}{2}a_1 + \tfrac{2}{3},$$

$$3a_3 = \tfrac{1}{2}a_2 + \tfrac{2}{3}a_1 + \tfrac{3}{4},$$

$$\cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot$$

$$\cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot$$

$$na_n = \tfrac{1}{2}a_{n-1} + \tfrac{2}{3}a_{n-2} + \tfrac{3}{4}a_{n-3} + \cdots + \frac{n}{n+1}$$

$$= \sum_{k=1}^{k=n} \frac{k}{k+1} a_{n-k}.$$

The first six values of a_n are

$$a_1 = \tfrac{1}{2}, \quad a_2 = \frac{11}{24}, \quad a_3 = \frac{7}{16}, \quad a_4 = \frac{2447}{5760}, \quad a_5 = \frac{459}{2304}, \quad a_6 = \frac{238043}{580608}.$$

See solution of 377 in the December issue.

Solutions of 377 and 378 were received, too late for credit in the December issue, from C. N. Schmall and H. E. Trefethen; also of 378 from A. L. McCarty.

GEOMETRY.

409. Proposed by S. LEFSCHETZ, University of Nebraska.

The sides of a triangle being in arithmetic progression, a and a' being, respectively, the smallest and largest sides, r, R the radii of the inscribed and circumscribed circles, to prove that $6Rr = aa'$.

SOLUTION BY W. C. EELLS, Tacoma, Wash.

Since the sides are in arithmetic progression, represent them by

$$a, \quad \frac{a+a'}{2}, \quad a'.$$

Then from trigonometry, we have

$$r = \sqrt{\frac{(s-a)(s-b)(s-c)}{s}}, \quad \text{and} \quad R = \frac{abc}{4\sqrt{s(s-a)(s-b)(s-c)}}$$

where s is the half-sum of the three sides a, b, c.

Substituting $s = \dfrac{3(a+a')}{4}$ and reducing, we have

$$r = \frac{1}{4}\sqrt{\frac{(3a'-a)(3a-a')}{3}}, \quad \text{and} \quad R = \frac{2aa'}{\sqrt{3(3a'-a)(3a-a')}}$$

whence $rR = \dfrac{aa'}{6}$ and $6rR = aa'$.

Also solved by J. Scheffer, C. N. Schmall, Levi S. Shively, A. M. Harding, and A. L. McCarty.